

## PATENT SPECIFICATION



Application Date: Jan. 21, 1939. No. 2120/39.

526,674

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Complete Specification Accepted: Sept. 24, 1940.

## PROVISIONAL SPECIFICATION

## Process for Producing Coloured Unsized Paper

We, THE GEIGY COLOUR COMPANY LIMITED, a British Company, of National Buildings, Parsonage, Manchester, in the County of Lancaster and JAMES KEATON, a British Subject, of said Company's address, do hereby declare the nature of this invention to as follows:—

This invention relates to improvements in pigments and their application to paper making. According to the invention a pigment base for use in paper making, consists of a composition of calcium sulphate, aluminium hydroxide and calcium aluminate as may be prepared by the reaction of calcium hydroxide, preferably calcium hydroxide in the freshly slaked form, with aluminium sulphate under such conditions as to produce a product as nearly neutral as possible. The invention further consists in incorporating this product, with the use of pigmentary colours in the manufacture of unsized paper.

## EXAMPLE.

1 part by weight of lime is slaked with hot water and a solution of about four parts by weight of alum is gradually added to the slaked lime with stirring. The exact proportions should be adjusted till the product has a pH of 7. If the product is made more alkaline or acid, the results are far inferior. There is a

considerable disadvantage in using a product of pH 8.0 and a product of pH 9.5 is of practically no value. 35

An aqueous suspension of the neutral product is now incorporated with a paper stock to produce a paper without size. It is found that the presence of the white base, prepared as above described actually increases the absorbent property of paper or other unsized paper, and it also effects a remarkable improvement both in evenness and depth of colouring by pigmentary colours. 40 45

The product is better when made from freshly slaked lime than from old slaked lime, and addition of alum to the lime, is preferred rather than admixture in the reverse order. 50

The pigmentary colour may be applied in admixture with the white base, and the invention includes such a composition. Any insoluble colouring matter may be used either organic or inorganic includ- 55 ing pigments and flakes.

The white base may, however, be applied first and the pigmentary colour applied in known manner as a separate operation.

Dated this 20th day of January, 1939.

W. P. THOMPSON & Co.,  
Chartered Patent Agents,  
12, Church Street, Liverpool, 1.

## COMPLETE SPECIFICATION

## Process for Producing Coloured Unsized Paper

We, THE GEIGY COLOUR COMPANY LIMITED, a British Company, of National Buildings, Parsonage, Manchester, in the County of Lancaster and JAMES KEATON, a British Subject, of said Company's address, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The present invention relates to the production and application of a substance for use in the manufacture of unsized paper.

Unsized paper is usually held by direct dyes. The use of pigmentary dyestuffs

would be advantageous, giving colours which are usually brighter, faster to light and less liable to bleed, but such colours are not absorbed by the paper unless, for example, alum is added: the use of this alum reduces the absorbency of the product. It has now been found possible to secure the advantage of using pigmentary colouring matters without reducing the absorbency of the paper. 80 85

The invention consists in the manufacture of unsized paper by treating paper pulp in the beater with a pigmentary colour and a reaction product of lime and aluminium sulphate formed within the pH range 5.5 and 8. 90

[Price 1/-]

**AMENDMENT - SEE LAST PAGE**

Price 4/-

The reaction product may be made as follows:—

1 part by weight of lime is slaked with 25 parts of hot water and about four parts 5 by weight of alum in the form of a 10% solution in water is gradually added to the slaked lime with stirring.

The product is formed within the range pH 5.5 to 8.

10 The exact proportions should preferably be adjusted until the product has a pH of 7 of the pH value is varied, usable products may conceivably still be obtained, but this would vary from dyestuff to dyestuff, and in the majority of cases examined one or more properties (e.g. strength, shade, brightness evenness, absorption, etc.) would be impaired.

The product hereinafter referred to as 20 the "white base" is better when made from freshly slaked lime than from old slaked lime, and addition of alum to the lime is preferred rather than admixture in the reverse order.

25 According to the invention the "white base" is used in conjunction with a pigmentary dyestuff.

An aqueous suspension of the product (after filtration and washing) may be 30 incorporated with paper pulp to produce a paper without size, and with a pigmentary colouring matter. It is found that the presence of the "white base", prepared as above described, actually 35 increases the absorbent property of unsized paper, and it also effects a remarkable improvement both in evenness and depth of colouring by pigmentary colours.

Alternatively, the pigmentary colour 40 may be first mixed with the "white base", and then incorporated in the paper pulp. Any insoluble colouring matter may be used, either organic or inorganic, including pigments and lakes.

45 The following example serves to illustrate such admixture:

1 part of the substance sold under the Trade Name "Irgalite Red RN Extra" 20% paste (which is believed to have the formula of the substance appearing in 50 Colour Index No. 69).

2 parts "white base" 30% paste.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A process for producing coloured unsized paper which consists in treating paper pulp in the beater with a mixture 60 of a pigmentary colour and a reaction product of lime and aluminium sulphate formed within the pH range between 5.5 and 8.

2. A process for producing coloured 65 absorbent paper which includes the step of mixing with a reaction product of lime and aluminium sulphate formed at a pH within the range 5.5 to 8, a pigmentary colouring matter and then incorporating 70 the mixture with paper pulp in the beater.

3. Coloured unsized paper containing a pigmentary colour and a reaction product of lime and aluminium sulphate 75 formed in a neutral reaction mixture.

4. A process as claimed in claims 1 and 2 in which the reaction product is formed in a reaction mixture having a pH of approximately 7.

5. Process as claimed in claims 1, 2 and 4 in which the reaction product is obtained by slaking one part by weight of lime with hot water and mixing with a solution of about 4 parts by weight of alum.

6. Processes of making coloured absorbent paper substantially as described.

Dated this 19th day of January, 1940.

W. P. THOMPSON & Co.,

Chartered Patent Agents,  
12, Church Street, Liverpool, 1.

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## ERRATA

### SPECIFICATION No. 526,674.

Page 1, line 74, for "held" read  
"dyed"

Page 2, line 12, for "of 7 of the pH"  
read "of 7. If the pH"

THE PATENT OFFICE,  
November 22nd, 1940.